

## **Resident Inspector Demographics and Staffing**

This attachment provides the annual update on demographic data for inspectors assigned to the Nuclear Regulatory Commission's (NRC's) Resident Inspector Program, as the Commission requested in a staff requirements memorandum (SRM) dated April 8, 1998. The purpose of this analysis is to determine whether the agency's actions associated with the Resident Inspector Program have resulted in a stable or increasing resident experience base and to identify any necessary actions. The scope of this review has been expanded to include an analysis of site staffing and related resident inspector issues. Also included is a discussion of the deletion of the quality-of-life metrics and an analysis of the calendar year (CY) 2004 ROP internal survey questions capturing quality of life issues for inspectors.

### **Resident Inspector Demographic Data**

The review of the demographics includes analysis of the overall program data for the resident inspector (RI) and senior resident inspector (SRI) groups. Tables 2 and 4 and Figures 1 and 2 summarize RI and SRI experience levels, respectively. Additionally, Figures 3 through 14 provide further analysis of the regions in each of the data categories. The months used for the statistical comparison are December 2000, November 2001, November 2002, November 2003, and November 2004. Median values were used for the comparisons.

The demographic analysis consists of five distinct data sets, including "NRC time," "total resident time," "qualified total resident time," "current site time," and "relevant non-NRC experience." These data sets align with the PR-1 through PR-5 metrics in Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," and are defined as follows:

- "NRC time" is the total number of years the individual has accumulated as an employee of the U.S. Nuclear Regulatory Commission (NRC).
- "Total resident time" is the total number of years the individual has accumulated as an RI or SRI.
- "Qualified total resident time" is the time the individual has been assigned to an RI or SRI position after completing the reactor operations inspector qualification requirements of IMC 1245, "Inspector Qualification Program for the Office of Nuclear Reactor Regulation Inspection Program."
- "Current site time" is the total number of years spent as an RI or SRI at the current site.
- "Relevant non-NRC experience" is nuclear power experience acquired outside of the NRC. Examples of relevant non-NRC experience are operation, engineering, maintenance, or construction experience with commercial nuclear power plants, naval shipyards, Department of Energy facilities, and/or the U.S. Navy nuclear power program.

## Analysis of 2004 RI Groups

Resident inspector demographic data for 2004 (see Table 2 and Figure 1) reflects a more stable RI population compared to data in 2003, during which time 27 new inspectors entered the program. The slight decline in NRC time reflects both the introduction of 14 new resident inspectors into the program and the departure of 6 experienced RIs.

Qualified total resident time and current site time increased as expected due to the hiring of 27 new resident inspectors in CY 2003. Relevant non-NRC experience and total resident time remained about the same. Of 74 resident inspector positions, 14 vacancies were filled in CY 2004. These vacancies were generally filled by persons who had not yet achieved full inspector qualifications, but were basic inspector certified under IMC 1245. This is indicative of a general practice of retaining new hires in the regional offices and certifying them to the basic level before assigning them to a site. Of the 14 new RIs, 11 had more than 3 years of relevant non-NRC experience indicating that a large number of experienced engineers entered the program.

Of particular note is that during 2004, only 6 RIs left RI positions, but all remained within the NRC. Three of the 6 were promoted to SRIs. This indicates that RIs are not leaving the agency but instead are being promoted or laterally transferred.

### Trend Analysis of Relevant Non-NRC Experience for Personnel Entering the RI Program

The 2004 data indicates that experienced engineers entered the program as RIs. On average, the 14 new RIs had about 12 years of relevant non-NRC experience, compared to an average of 9 years in 2003.

Table 1 shows the percentage of new RIs with less than 3 years of relevant non-NRC experience from 1997 through 2004. The turnover rate in the RI population was 19 percent in 2004 compared to 36 percent in 2003. The turnover rate was based on 74 available RI positions and 14 inspectors entering the RI program during 2004.

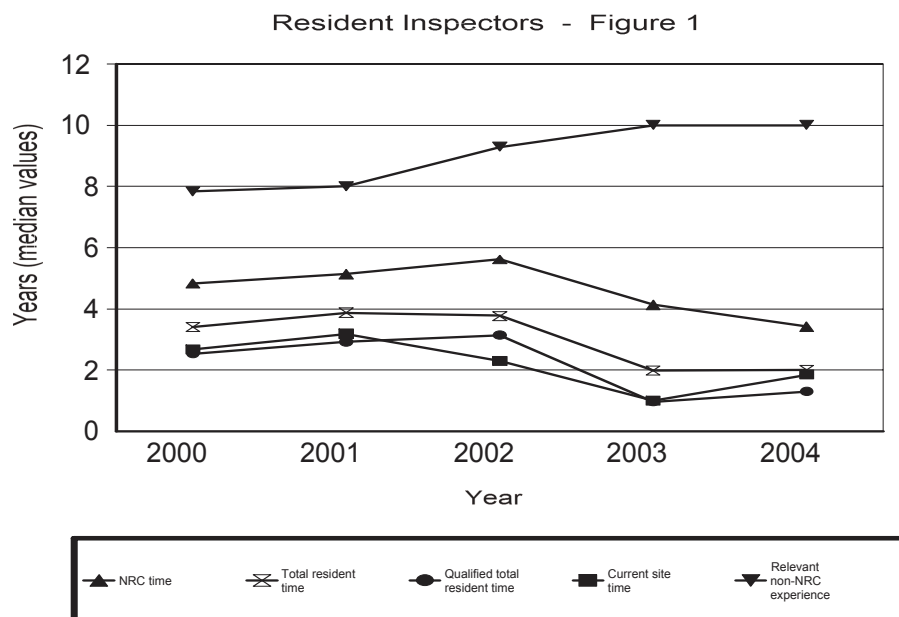
**Table 1. Percentage of New RIs With Less Than 3 Years of Relevant Non-NRC Experience**

1997	1998	1999	2000	2001	2002	2003	2004
6% (1/18)	12% (2/17)	0% (0/5)	31% (4/13)	6% (1/16)	20% (3/15)	30% (8/27)	21% (3/14)

NOTE: These percentages represent the ratio of RIs hired in that particular year who had fewer than 3 years of relevant non-NRC experience to the total number of RIs hired.

Table 2. Summary of RI Group Experience Levels (in years)						
		Dec. 2000	Nov. 2001	Nov. 2002	Nov. 2003	Nov. 2004
NRC time	average	6.26	6.21	6.39	5.34	5.60
	median	4.83	5.13	5.61	4.13	3.42
Total resident time	average	3.84	3.84	3.90	3.28	3.20
	median	3.41	3.87	3.77	1.99	2.00
Qualified total resident time*	average	3.15	3.11	3.14	2.50	2.48
	median	2.54	2.92	3.14	0.96	1.30
Current site time	average	2.54	2.74	2.86	1.64	2.18
	median	2.68	3.18	2.30	1.00	1.85
Relevant non-NRC experience	average	8.07	8.80	9.68	10.26	11.01
	median	7.83	8.00	9.29	10.00	10.00

\*NOTE: "Qualified total resident time" counts time for RIs that are fully qualified under IMC 1245 but does not count time for RIs that are basic certified under IMC 1245. Inspection hours by RIs that are basic certified count against the baseline inspection program. Data collection was developed to capture fully qualified time because the basic certification program did not exist until 2002. Data presented under "total resident time" includes time spent as being basic certified.



### Analysis of 2004 SRI Groups

The NRC experience levels for the SRI group (see Table 4 and Figure 2) increased in all areas except NRC time, which decreased due to the introduction of new SRIs into the program. The increases in total resident time, qualified total resident time, current site time, and relevant non-NRC experience reflect additional experience gained by the 20 new SRIs in 2003.

Table 3 shows that during 2004, 6 SRI positions were filled, down significantly from the 20 SRI positions filled in 2003. Filling the SRI positions created vacancies in the RI program, as evidenced by the hiring of 14 new RIs in 2004. Five SRIs left the program during this period. Three of these SRIs took lateral reassignments and two retired.

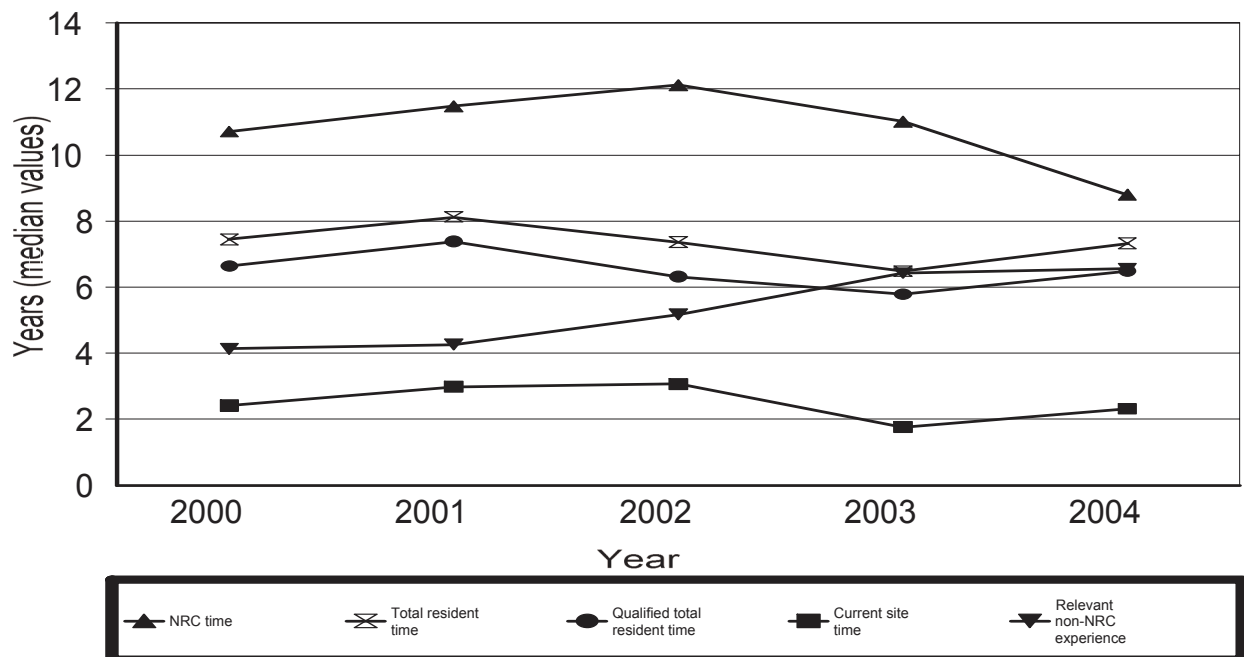
**Table 3. RI and SRI Activity During 2004**

Activity	RI	RII	RIII	RIV	Total
SRI positions filled	2	1	1	2	6
RI positions filled	1	6	4	3	14
<b>SRI Movement</b>					
SRI promotions to GG-15	0	0	0	0	0
SRI lateral reassignments	1	1*	0	1	3
SRI retirement	1	1	0	0	2
*Lateral reassignment to headquarters.					

NOTE: The number of positions filled does not necessarily equal the number of positions vacated during a given period because of the time involved in the recruitment process.

Table 4. Summary of SRI Group Experience Levels (in years)						
		Dec. 2000	Nov. 2001	Nov. 2002	Nov. 2003	Nov. 2004
NRC time	average	11.18	12.03	11.85	11.30	11.57
	median	10.70	11.47	12.11	11.00	8.80
Total resident time	average	8.07	8.66	8.17	8.22	8.22
	median	7.44	8.12	7.36	6.82	7.32
Qualified total resident time	average	7.27	7.94	7.36	7.40	7.42
	median	6.63	7.38	6.31	5.95	6.49
Current site time	average	2.84	2.96	2.90	2.44	2.68
	median	2.41	2.98	3.06	1.76	2.31
Relevant non-NRC experience	average	5.62	6.07	7.26	8.37	8.51
	median	4.13	4.25	5.17	6.42	6.55

Senior Resident Inspectors  
(Program Total) - Figure 2



## **Deletion of the Quality-of-Life Metrics**

In addition to the five resident demographic metrics in IMC 0307, there are currently five additional quality-of-life metrics, PR-6 through PR-10, as listed below.

- PR-6 Site Coverage Ratio
- PR-7 Non-IMC 1245 Training Time Ratio for Resident and Senior Resident Inspectors
- PR-8 Rotational Opportunities Ratio for Resident Inspectors
- PR-9 Non-IMC 1245 Training Time Ratio for Region-Based Inspectors
- PR-10 Rotational Opportunities Ratio for Region-Based Inspectors

These metrics were developed by the staff to address regional division directors' concerns that the conversion from the N+1 to N staffing policy was being implemented almost simultaneously with the launching of the new ROP. The combination of these two evolutions was seen as potentially detrimental to the region's ability to provide training and developmental opportunities for inspectors. During 2004, the regions and NRR agreed that the reason for the metrics was no longer an issue, and based on the difficulties and amount of resources required to collect the data, the staff decided to delete these metrics.

## **Site Staffing Metric**

The site staffing data is intended to measure the permanent inspector staffing levels at each of the reactor sites for both RIs and SRIs in order to evaluate the agency's ability to provide continuity of regulatory oversight. The staff developed a new site staffing metric as a result of a recommendation by the Davis-Besse Lessons Learned Task Force (DBLLTF). Specifically, DBLLTF item 3.3.5.3 recommended that the staff "establish measurements for resident inspector staffing, including the establishment of program expectations to satisfy minimum staffing levels."

Data for this metric was pilot tested in CY 2004 and adjustments have been made based on the results of the pilot and a revised metric was issued to the regions in December 2004. Preliminary results of the pilot test data indicated that on average the sites were staffed 99 percent of the time either by permanent assignments or through rotational assignments with a minimum duration of 6 weeks. The data indicates a high level of staffing; however, it does not reflect instances where permanently assigned RIs or SRIs were away from their sites due to unplanned leave or on rotational assignments. Adjusting the data accordingly would reduce the average time for site coverage. For this reason, the metric was redesigned and will be reported on in the CY 2005 ROP self-assessment SECY paper.

The redesigned metric only applies to inspectors that have been assigned to the site permanently or through a rotation with a minimum duration of 6 weeks and who have attained at least a basic inspector certification status. The data will indicate the number of days a qualified RI and SRI were permanently assigned to the site during the month divided by the number of days in the month. Days spent in training, meetings away from the site, participation in team inspections, on leave, or other temporary duties will not be counted against the metric. The success criteria for the revised metric is 90 percent coverage for each site. Therefore, any single site that falls below 90 percent will be specifically evaluated as part of the ROP self-assessment process.

## **CY 2004 Internal Survey**

Questions were added to the ROP internal survey to ensure that inspector training/rotational needs were considered and to get the feedback directly from the inspector population. Approximately two-thirds of the survey respondents indicated that since the policy change from N+1 to N, adequate IMC-1245 training is provided to effectively implement the ROP (64 percent) and non-IMC-1245 training is made available to assist in professional development (67 percent). Two-thirds of the respondents also agreed that rotational opportunities are available to assist in professional development (66 percent).

## **Conclusions**

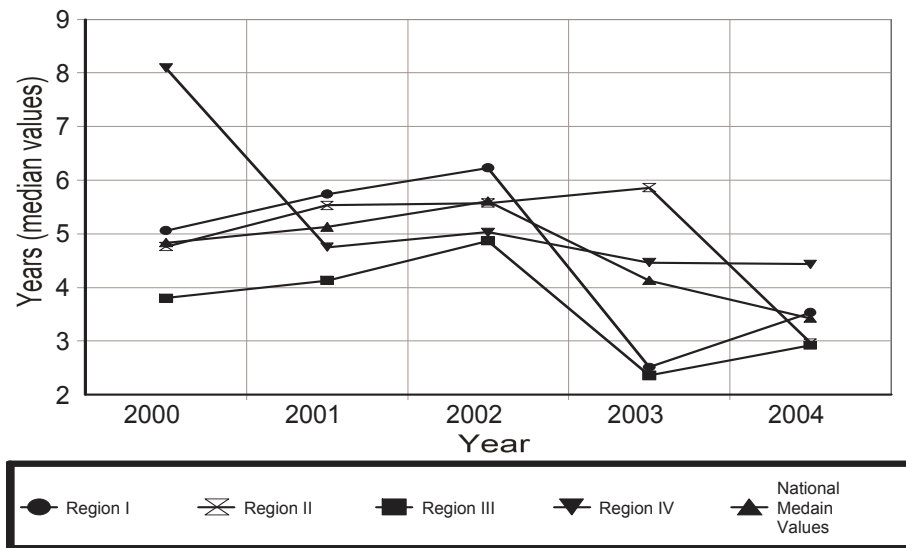
In summary, the staff concluded that:

- The RI and SRI staffing levels are generally good.
- The staffing turnover rate for CY 2004 was not excessive.
- The experience levels of both RIs and SRIs is relatively high.
- SRIs and RIs are provided adequate training/rotational opportunities.

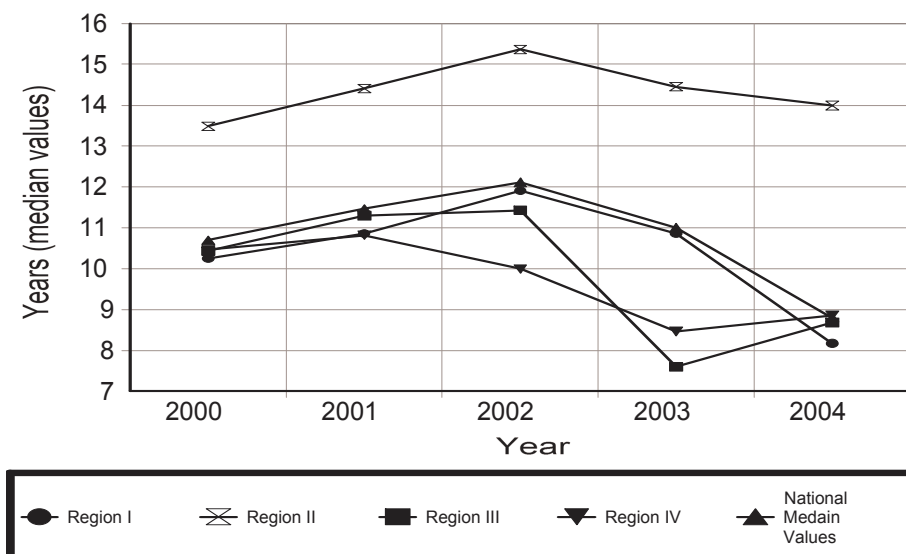
In conclusion, the program continues to attract and retain quality staff. Therefore, no resident inspector program changes are warranted at this time. The staff will continue to monitor the RI program.

**NRC Time:** NRC time for RIs remained about the same in Region IV, increased in Regions I and III, and decreased significantly in Region II. The decrease in Region II was due to the hiring of six of the new 14 RIs. NRC time for SRIs increased in Regions III and IV, decreased in Regions I and II.

NRC Time (RIs) - Figure 3



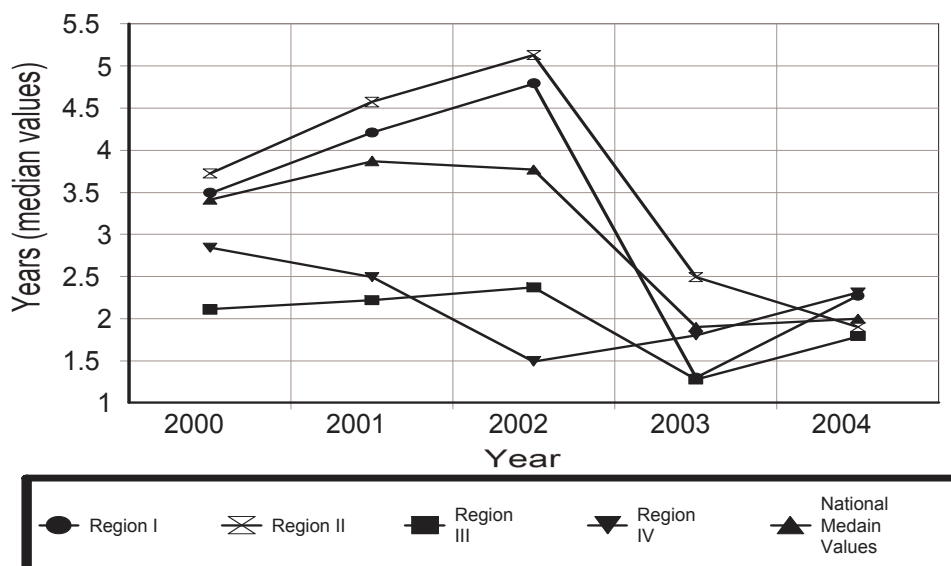
NRC Time (SRIs) - Figure 4



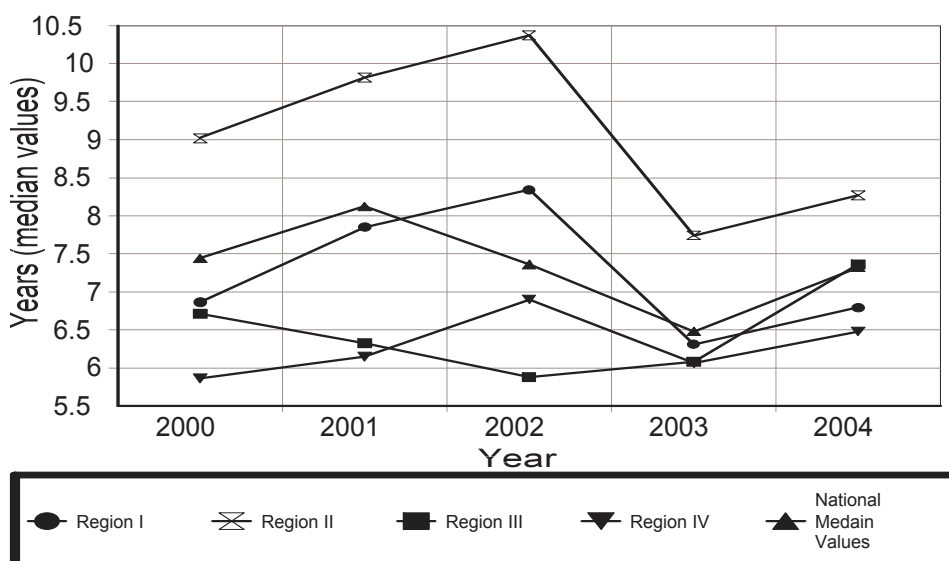


**Total Resident Time:** With the exception of Region II, all of the regions increased in total resident time for RIs. Region II experienced a slight decline due to the hiring of six of the 14 new RIs. All the regions reflected an increase in total resident time for SRIs.

Total Resident Time (RIs) - Figure 5

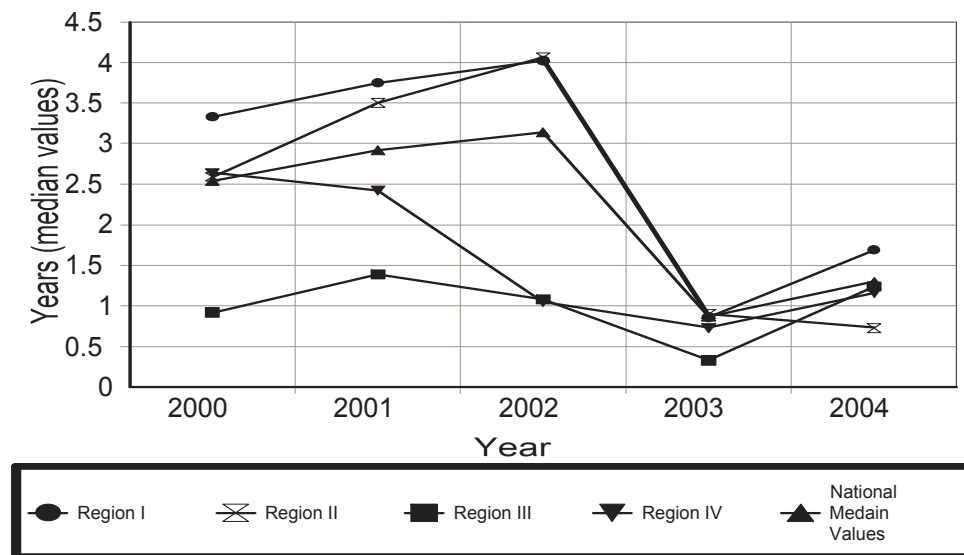


Total Resident Time (SRIs) - Figure 6

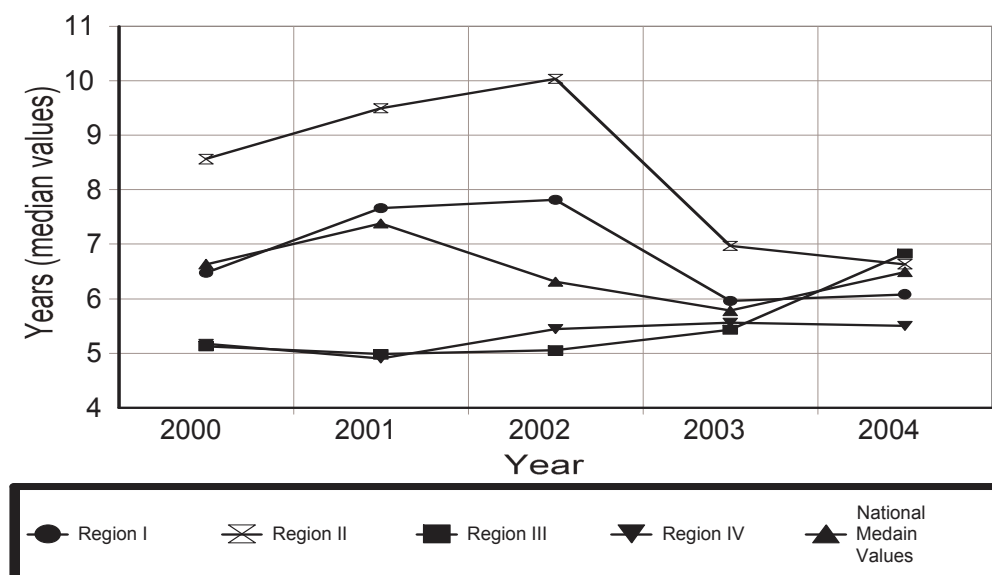


**Qualified Total Resident Time:** All the regions, except Region II, experienced an increase in qualified total resident time. Qualified total resident time for SRIs essentially remained the same for three regions, while Region III experienced an increase.

Qualified Total Resident Time (RIs)  
Figure 7

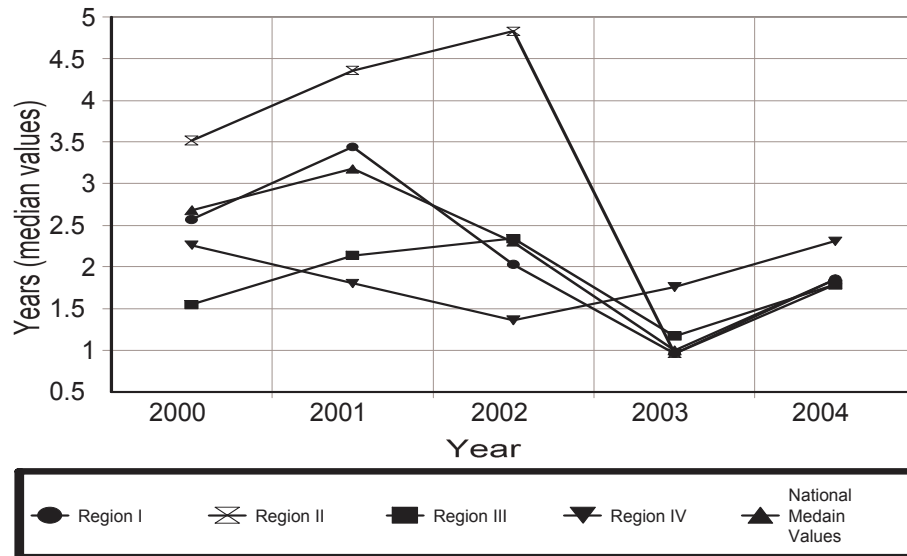


Qualified Total Resident Time (SRIs)  
Figure 8

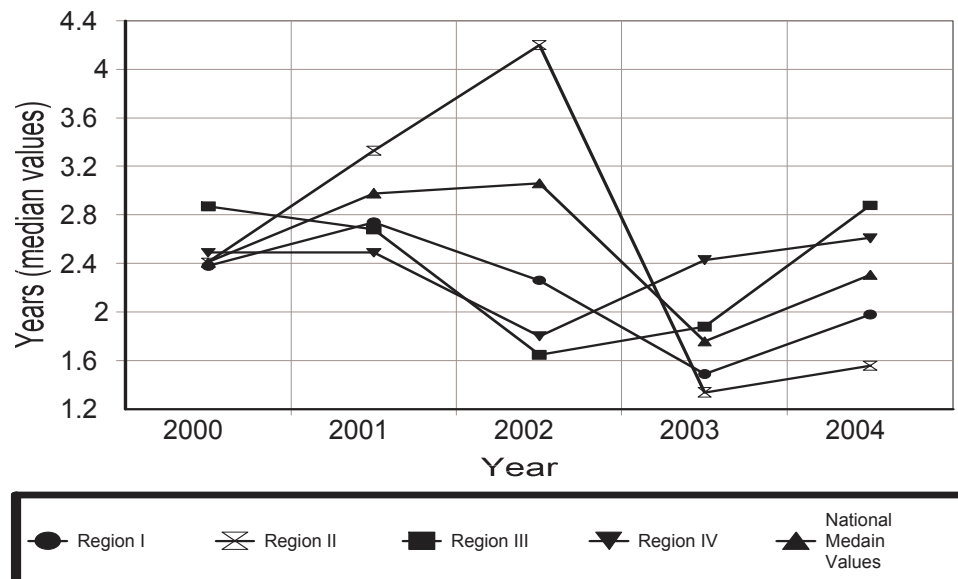


**Current Site Time:** Current site time increased for both the RI and SRI populations in all four regions. Current site time increased significantly in Regions I and II for the RI population.

Current Site Time (RIs) - Figure 9

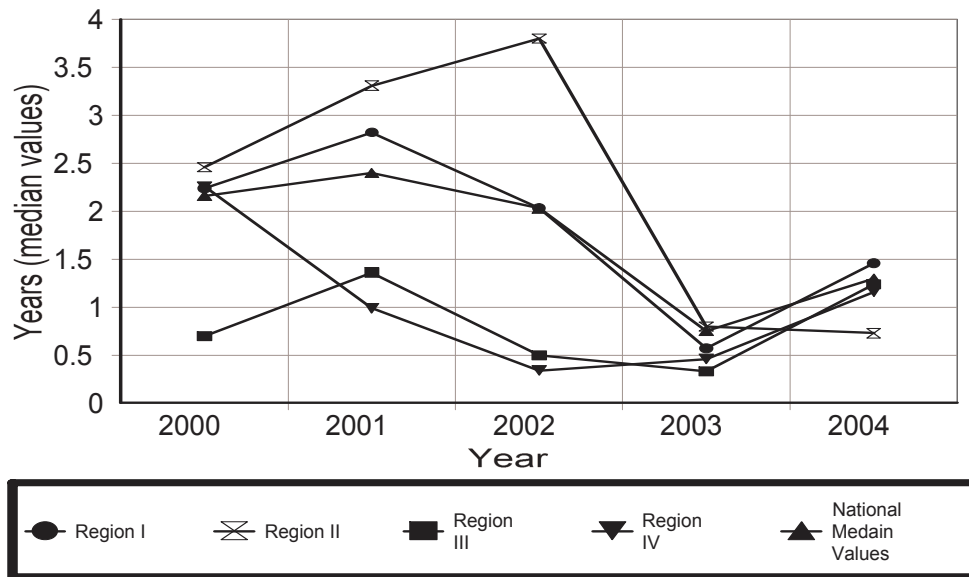


Current Site Time (SRIs) - Figure 10

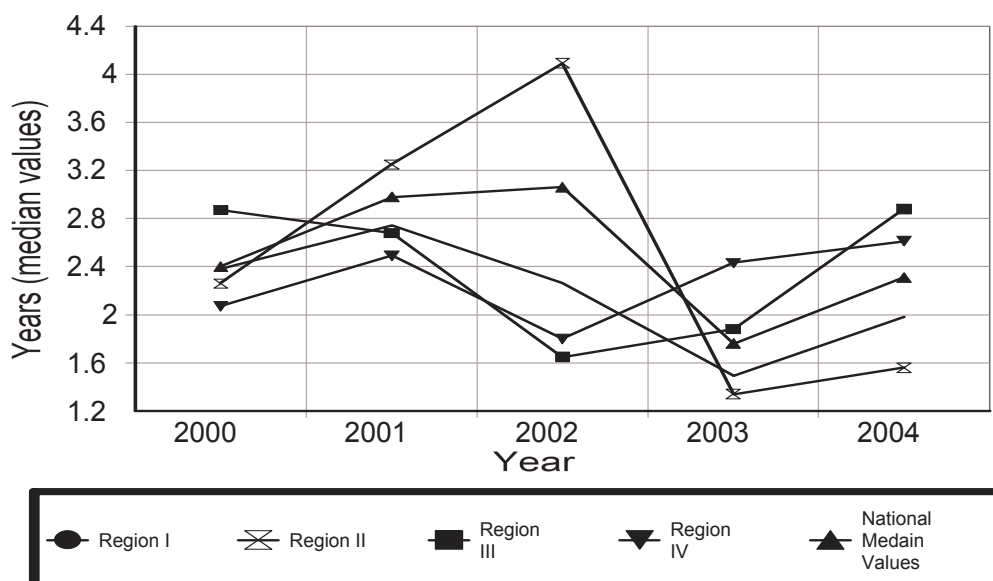


**Qualified Current Site Time:** The qualified current site time for RIs increased in all of the regions with the exception of Region II, which decreased slightly due to hiring the majority of the new RIs in CY 2004. Qualified current site time for SRIs increased for all the regions, with Region III experiencing the largest increase.

Qualified Current Site Time (RIs)  
Figure 11

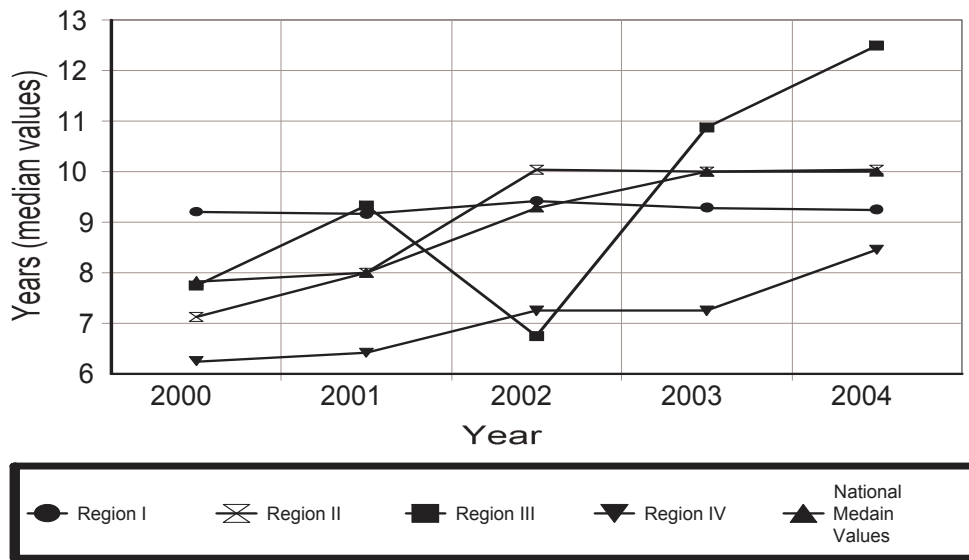


Qualified Current Site Time (SRIs)  
Figure 12



**Relevant Non-NRC Experience:** Relevant non-NRC time for RIs remained the same for Regions I and II, with Regions III, and IV experiencing increases. Relevant non-NRC time for SRIs remained relatively stable with Regions II experiencing a slight increase and Region III experiencing a slight decrease.

Relevant Non-NRC Time (RIs)  
Figure 13



Relevant Non-NRC Time (SRIs)  
Figure 14

